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ABSTRACT

This document contains individualized units of study for use in classroom learning centers to teach intermediate and junior high school students about the metric system. The unit was developed by teachers. Upon completion of the units students should be able to demonstrate the correct use of the metric terms and symbols used in cooking and be able to use metric kitchen equipment. The Teacher's Guide contains directions for setting up the learning centers, pre- and posttests and all student worksheets. The student booklet contains concise background readings and specific directions which the students must follow in order to complete the learning center activities. Forty five minutes per day for two or three weeks is required to complete the units. Students are involved in many different kinds of activities. They measure ingredients, unscramble letters, complete crossword puzzles, make a poster showing the different types of ingredients you would measure in the different types of solid or dry measures, make up a riddle about why you should use a liquid metric measure that has a spout or lip on it, prepare a bulletin board of different pan sizes in metric measures, and from a catalog find pictures of at least eight different pan sizes which they must then convert to metrics. (Author/RM)

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BEFORE YOU COOK IN METRICS

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Teacher's Guide

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Developed By:
Joan Noyes

As Part of
Project COST
ESEA Title IV
Kansas State Dept. of Education
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Easton, KS 66020

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These materials were developed by teachers in USD 449, Easton, Kansas and by several teachers in surrounding districts. Funding for this Title IV c-i project was provided by Kansas State Department of Education from January 1978 through June 1980.

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Project COST or Consumer Operations Survival Training was a curriculum planning and development effort to produce capsules for kindergarten through twelfth grade including special education. The capsules were designed to integrate consumer education into the existing curriculum using an individualized approach to instruction.

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CAPSULE OBJECTIVES

At the completion of this capsule the student should be able to:

- demonstrate correct use of the metric terms and symbols used in cooking.
- demonstrate the ability to use metric kitchen equipment.

SUPPLIES NEEDED

The following supplies will be need to complete the capsule.

For the activities it often says for the student to get something from the Management Station or from the Measurement Station. This is explained in the pages following the list of supplies you will need.

250 ml dry measure
125 ml dry measure
50 ml dry measure
1 ml measuring spoon
2 ml measuring spoon
5 ml measuring spoon
15 ml measuring spoon
25 ml measuring spoon
Metric cookbooks or recipes
markers-assorted colors
paste
magazines to cut up
newspapers
spatulas
paper towels
oatmeal
sugar
scales or balance
different sizes of pots and pans with different letters of the alphabet taped on them
metric rulers or sticks
variety of metric thermometers
stove (or have access to one)
refrigerator (or have access to one)
posterboard, oaktag, or the like
catalogs
scissors
paper
rubber scrapers
sifters
shortening
flour

USING THE BEFORE YOU COOK IN METRICS CAPSULE AND THE CENTER

This center is designed to be used with four learning capsules, Basic Metrics: Parts 1, 2 and 3 and Before You Cook in Metrics. The capsules will serve the purpose of task cards, since they will direct the students to appropriate stations in the activities he/she has chosen. The capsules will also be a source of information to the student about metrics.

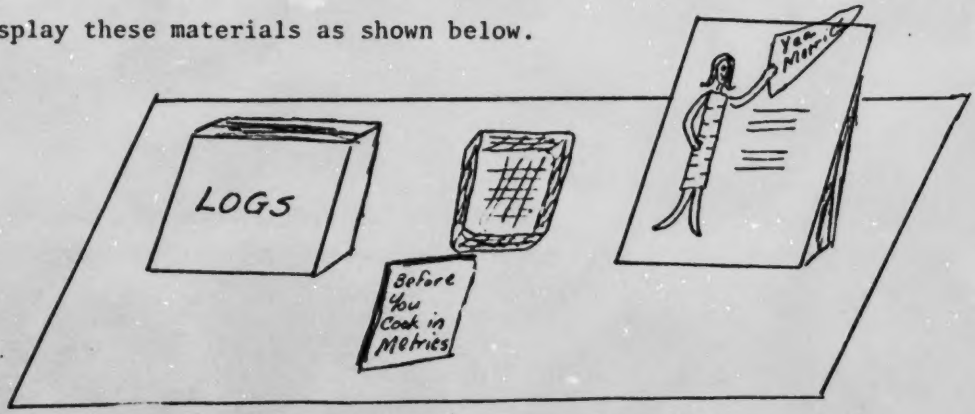
Since space in some classrooms is limited, activities may take place at the students' desks. However, some activities will need to be completed at a satellite station. Working time at the center will be 45 minutes per day for two or three weeks

Students are directed by the capsule to complete activities. Directions are given in the capsule which tell them how to do the activity, where to go for materials and what to do with their work when they are finished.

The various stations of the center are spread out in the classroom to allow for flow of traffic and noise. A description of each station may be found on the following pages.

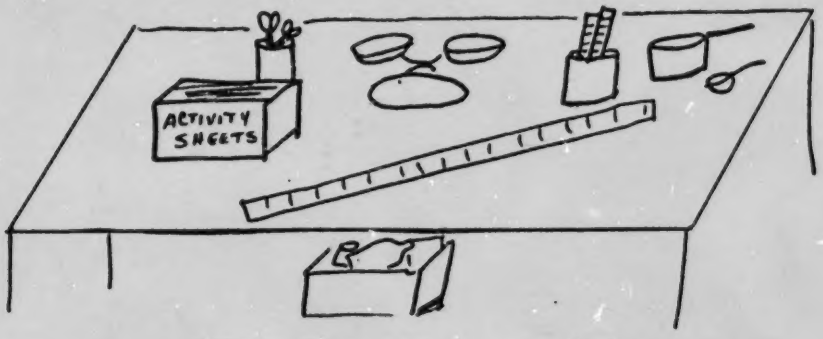
MANAGEMENT STATION

The management Station consists of posters, a file for individual student logs, copies of the capsule Before You Cook in Metrics, answer keys for activities, copies of all worksheets and a basket for completed work. A table top is used to display these materials as shown below.



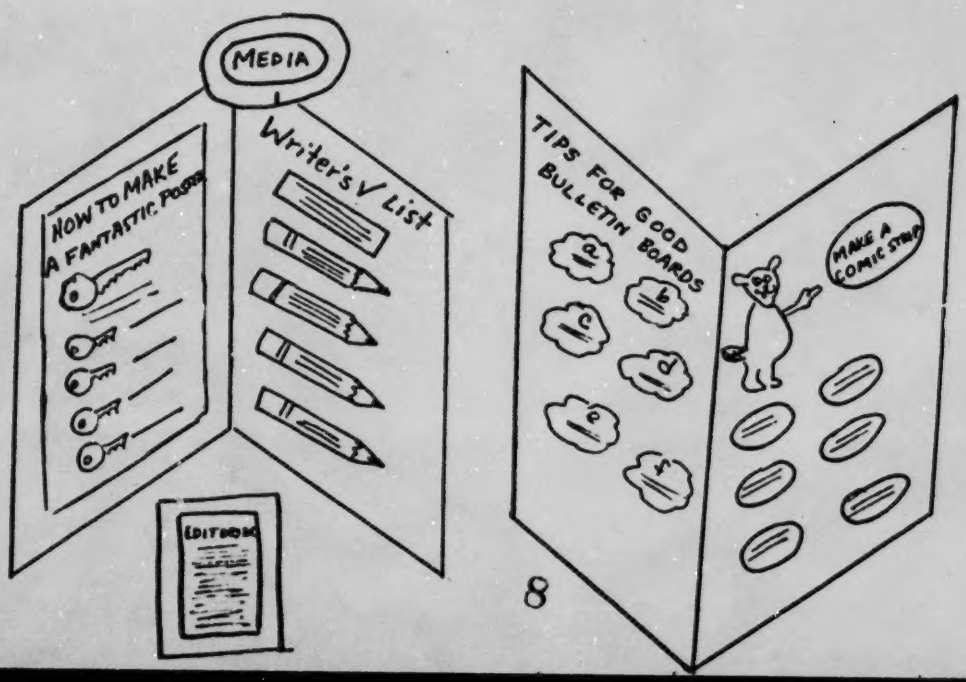
MEASUREMENT STATION

The Measurement Station contains a box of assorted bottles, boxes, cans, etc. to be used for measurement activities. You will need to include some pots and pans to be measured and some metric measuring cups and spoons. There is also a box for worksheets and games which go with the activities in this station. The station will also contain meter sticks, scales and metric weights for the various activities described in the capsule.



MEDIA STATION

This station is designed to be used as a teaching tool for students. It is constructed from mat board which has been hinged together with wide tape. Each section contains information needed by students to complete writing or display activities. Detailed descriptions of each section are given on the following pages.



NOTES TO THE TEACHER

It would be very beneficial for the student to have completed capsules titled Basic Metrics: Parts 1, 2 and 3 before doing this capsule.

It would also be helpful for the student to have some knowledge of the kitchen and kitchen procedures before doing this capsule.

Section 1.

Activity 1- You will need to have available supplies for making posters.

Activity 2-You will need an area set up for the students to measure sugar, flour, oatmeal and shortening. This could be done at a table if a kitchen lab is not available.

Activity 3- This could be done with or without the cards that are mentioned in the activity. The cards will be more interesting for some to use and will help them understand better. The cards could be colored and then laminated to make them last longer. You will need several of each of the different cards.

Section 2

Activity 1- You will need to have poster supplies available.

Activity 2- You will need an area set up for measuring liquids. It could be a table if you do not have a kitchen lab available.

Activity 3- You need to have writing supplies and cartooning supplies.

Section 3

Activity 1- You will need materials available to make bulletin boards.

Activity 2- You will need catalogs, scissors, and paste.

Activity 3- You will need to have many different sizes of pans, lettered with tape so that the student can list the letter of the pan and then measure its size in cm. You will also need to have a list of these pan sizes for yourself to check student work.

Activity 4- You will need pans of different sizes and have them lettered with tape. You will also need to have a list of these pans and sizes for yourself to check student work.

Section 4

Activity 1- You will need some metric thermometers of different types and a stove and refrigerator available . If these are not available you could use a hot plate as a substitute for some of the activities or maybe have the students do these at home.

Activity 3- You will need scales or a balance, measuring equipment along with sugar, flour, oatmeal and shortening.

Name Key Date _____

BEFORE YOU COOK IN METRICS

PRE-TEST

Match the words in column A to the abbreviations in column B. Put the correct letter on the line to the left of the number.

c	1. gram	a.	ml
h	2. centiliter	b.	m
e	3. milligram	c.	g
i	4. celsius	d.	l
f	5. centimeter	e.	mg
d	6. liter	f.	mg
b	7. meter	g.	^{o}F
		h.	cl
		i.	^{o}C

Pick the correct answer and write the letter on the line to the left.

c 8. A milliliter is _____ times smaller than 1 liter.

a. 10

b. 100

c. 1000

a 9. A gram is _____ times larger than a decigram.

a. 10

b. 100

c. 1000

b 10. A centimeter is _____ times smaller than a meter.

a. 10

b. 100

c. 1000

c 11. A kilogram is _____ times larger than a gram.

a. 10

b. 100

c. 1000

b 12. Dry measures come in _____ sizings.

a. liter

b. milliliter

c. meter

a 13. Unless told differently, dry ingredients are measured:

a. level

b. heaping

c. rounded

c 14. 1 cup = _____ ml

a. 50

b. 125

c. 250

c 15. When measuring a liquid, always hold the measure:

a. so you are looking down at it

b. so you are looking up at it

c. at eye level.

C 16. 1 liter is about equal to

a. ½ c.

b. 2 c.

c. 1 qt.

a 17. Metric temperature is recorded in

a. celsius

b. fahrenheit

c. both

b 18. A liquid measure has a lip on it because

a. it can make a hole in the other ingredients you are pouring into

b. it will not spill all over as easy

c. so it looks different from dry measures

a 19. If a recipe calls for a 190° C temperature, what would it be in °F.

a. 374°

b. 350°

c. 290°

True or False

Mark the following statements T if they are true or F if they are false.

T 20. You need to keep your non-metric measuring equipment.

F 21. Water freezes at 100°C.

Circle the correct word

22. You use a _____ to weigh ingredients.

(scale) thermometer

WORKSHEET # 1-3 Name key Date _____

Section 1

Activity 3

Before You Cook In Metrics

Complete the following worksheet and when finished, turn it in to be checked.

Using the 250 ml, 125 ml, 50 ml, 25 ml, 15 ml, 5 ml, 2 ml, and 1 ml measure cards from the Measurement Station, make up the correct answers to the following questions.

Example: Write the different combinations of ways to measure 150 ml, using no more than 4 measurements.

Answer: 125 ml + 25 ml
50 ml + 50 ml + 50 ml
25 ml + 25 ml + 50 ml + 50 ml

1. Write the different combinations of ways you can measure 375 ml using no more than 4 measurements.
   250 ml + 125 ml
   250 ml + 50 ml + 50 ml + 25 ml
   125 ml + 125 ml + 125 ml

2. Write the different combinations of ways you can measure 50 ml using no more than 4 measurements.
   50 ml
   25 ml + 25 ml
   25 ml + 15 ml + 5 ml + 5 ml

3. Write the different combinations of ways you can measure 500 ml using no more than 4 measurements.
   250 ml + 250 ml
   250 ml + 125 ml + 125 ml
   125 ml + 125 ml + 125 ml + 125 ml

WORKSHEET # 1-4 Name key Date _____

Section 1

Activity 4

Before You Cook In Metrics

Complete the following worksheet and when finished, turn it in to be checked.

Complete the following sentence by filling in the correct word. There is a blank for each letter in the word that correctly answers the question.

1. Ml is the abbreviation for m i l l i l i t e r.
   1
2. 250 ml is equal to o n e c u p.
   2
3. 125 ml is equal to one - half cup.
4. Dry measures can be made of m e t a l or p l a s t i c.
   3 4 5
5. Unless told in the recipe to round off or heap the ingredients, you l e v e l it off.
   6
6. To measure in metrics, you will have to purchase some new e q u i p m e n t.
   7

Write the letter from the words you filled in above on the blank it corresponds with below.

Before long, you, the consumer, will have to learn M E T R I C S.
3 6 5 1 7 2 4

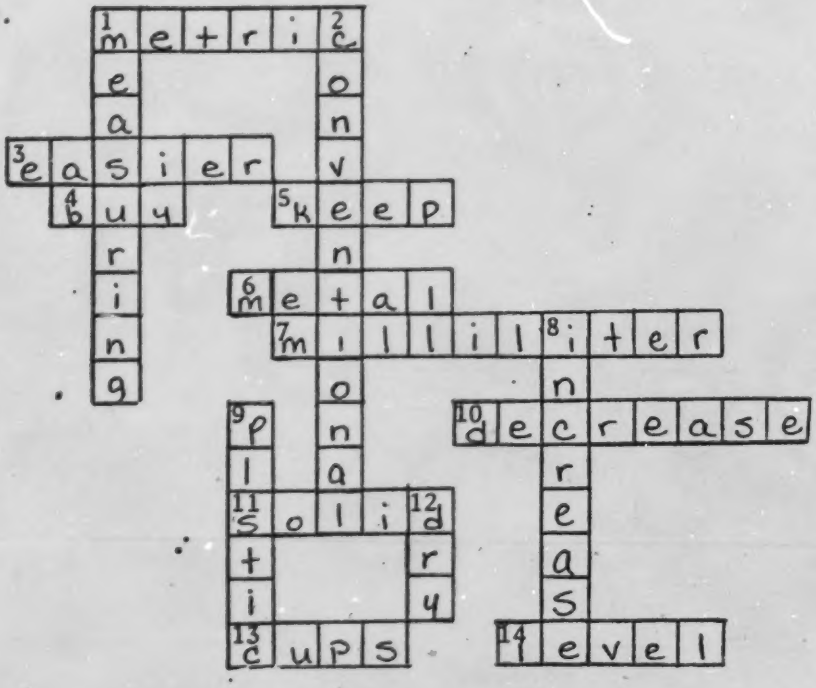
WORKSHEET # 1-5 Name key Date _____

Section 1 Self-Check

Activity 5

Before You Cook In MEtrics

Complete this crossword puzzle and then get the key from your teacher and check your paper. Return the key and your paper to your teacher to record your score.



ACROSS

1. Instead of using cups and tablespoons, use milliliters which is _____.
3. Metric measuring is _____ than conventional.
4. You will need to _____ new metric measuring utensils.
5. Be sure to _____ your conventional measures for old recipes.

DOWN

1. Use solid _____utensils to measure flour in.
2. For recipes that are not metric, you need your _____ measuring utensils.
8. When making an amount larger, you are to _____ it.
9. Metric utensils come in _____ also.

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6. Metric utensils come in _____.

7. The unit of measure for measuring small amounts of solid ingredients is _____.

10. To make an amount smaller you _____ it.

11. Shortening is a type of _____ ingredient.

12. Flour is a type of _____ ingredient.

13. In conventional measuring, use the unit of _____.

14. Unless told otherwise, always use a _____ measurement.

NOW YOU'RE COOKING, LET'S GO ON TO SECTION 2.

WORKSHEET 2-4 Name key Date_____

Section 2 Self-check

Activity 4

Before You Cook In Metrics

True or False

Circle the correct word to answer each question. Then get the key from your teacher, check your paper and turn in both pages so your teacher can record the score.

(True) or False 1. When measuring a liquid, hold the measure at eye level for an accurate measure.

True or (False) 2. You can use a measure that has no spout, to measure liquids.

(True) or False 3. Liquid measures come in glass.

(True) or False 4. Liquid measures come in more than 1 size.

(True) or False 5. You need special liquid measurers for metric recipes.

WORKSHEET # 3-4 Name key Date _____

Section 3 Self-check

Activity 4

Before You Cook In Metrics

Complete this self-check. When you have finished, get the key from your teacher and check your paper. When you are done, give your paper and the key to your teacher so your score can be recorded.

Answer the following questions.

1. Pans are measured in centimeters in metrics.
2. Pots are measured in liters in metrics.
3. A 1 quart pot is about the same as a liter pot.
4. Do pots and pans have to be in metrics before you can use them in a metric recipe? no. Explain. Convert them from inches to cm.
5. Get 3 different sizes of pans from the Measurement Station. Measure each pan and record it and its letter. answers will vary

	Letter	Pan Size in Metrics
1.		
2.		
3.		

WORKSHEET 4-2 Name key Date _____

Section 4

Activity 2

Before You Cook In Metrics

Complete the following worksheet and when finished, turn it in to be checked.

Use the following formulas to convert from ^{o}C to ^{o}F or from ^{o}F to ^{o}C, be sure to show your work.

From ^{o}F to ^{o}C

$^{o}F - 32^{o} \times 5/9 = {}^{o}C$

From ^{o}C to ^{o}F

$^{o}C \times 9/5 + 32^{o} = {}^{o}F$

1. Changed the oven temperature from $325^{o}F$ to ^{o}C.

   162 °C or 163°C

2. Change the oven temperature from $275^{o}F$ to ^{o}C.

   135°C

3. If the recipe for candy calls for a temperature of $212^{o}F$, what would that be in ^{o}C.

   100°C or 101°C

WORKSHEET 4-2 (continued)

4. Change 87 °C to °F.

189° F

5. Change 135 °C to °F.

275° F

WORKSHEET 4-5 Name key Date _____

Section 4 Self-check

Activity 5

Before You Cook In Metrics

Unscramble the following letters to find a word that has to do with cooking in metrics. When you find the word, write its definition beside it. When finished, get the key from your teacher and check your paper. Turn the key and your paper back into the teacher to be recorded.

1. eotrtmehmre thermometer

2. caesls scales

3. nebaacl balance

4. lcessui celsius

5. agsmr grams

6. eedgres degrees

CAPSULE SELF-CHECK Name key Date_____

Before You Cook In Metrics

Complete the sentence. There is a line for each letter.

1. Instead of measuring in teaspoons and tablespoons, in metrics you measure in milliliters.
2. Pans are measured in centimeters instead of inches.
3. Saucepans are measured in liters instead of quarts.
4. To measure a loaf pan, measure the length, width, and depth.
5. Temperature in metrics is measured in degrees celsius.
6. Some foods are measured by weight and to measure them you use a balance or scales.
7. The unit of measure when measuring by weight is in grams.

When you have completed this, get the key from the teacher, grade your paper, and return key and your paper to the teacher.

Before You Cook In Metrics QUEST KEY

Answers may vary some, but you can follow this as a guide.

a. Take teaspoons x 5 = ml

so 20 ml is about 4 teaspoons

b. 20 divided by 4 = 5 ml

c. Take tablespoons x 15 = ml

so 20 ml is about 1.3 tablespoons

d. 20 divided by 1.3 = 15 ml

e. 1 cup = 250 ml

Name key Date _____

Before You Cook In Metrics POST-TEST

Choose the correct answer and write the letter on the line to the left of the number.

b 1. Metric temperature is recorded in:

a. °F

b. °C

c. °T

a 2. To weigh ingredients for a recipe you use:

a. scales

b. thermometer

c. level

b 3. If you have to convert a recipe that says to bake at 235 °C to °F, what would it be:

a. 400

b. 455

c. 375

b 4. 2 liters is about the same as:

a. 1 quart

b. 2 quarts

c. 3 quarts

b 5. Dry measures come in _____ sizes

a. l

b. ml

c. m

Before You Cook In Metrics -p. 2 Post-test

b 6. ½ c. = _____ ml.

a. 50

b. 125

c. 250

c 7. Pans are measured in _____ sizes for metrics

a. inches

b. meters

c. centimeters

b 8. To measure a pan for its size

a. measure from outside to outside.

b. measure from inside to inside.

c. measure from outside to inside.

c 9. When measuring a rectangular pan, for example, you need to know its

a. length

b. width

c. length and width

a 10. Water freezes at

a. 0°C

b. 32°C

c. 100°C

C 11. The type of thermometer used when frying french fries would be

a. oven

b. meat

c. frying and candy

Given below are a list of abbreviations of metric terms used in cooking. Beside the abbreviation, give the word it stands for.

12. ml milliliter

13. m meter

14. g gram

15. l liter

16. mg milligram

17. cm centimeter

18. °c degrees celsius

19. How do metric thermometers vary from non-metric thermometers?

The temperatures are in metric, degrees celsius

Put a ✓ by those ingredients that require a liquid measurement and put an X by those that require a dry or solid measurement.

X 20. salt

✓ 21. water

X 22. flour

X 23. oatmeal

✓ 24. milk

X 25. baking powder

Before You Cook In Metrics BIBLIOGRAPHY

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3. Rosse, Frank Jr.; The Metric System ; S. G. Phillips Publishers; New York; 1974.

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RECIPE BOOKS

There are many available and these are just 2 of the many.

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Sears Tower
Chicago, IL. 60684

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Rosemont, IL 60018 1977.

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Kraft, Inc. Dept. jj
PO box 730
Chicago, IL 60677
Nov. 1978

APPENDIX

This appendix contains copies of all worksheets and assessments. These copies may be used to make your own classroom quantity copies. To use, unstaple the sides of the teacher's guide and remove the worksheet and assessment pages. Restaple the remaining pages of the teacher's guide.

Name _____

RECORD SHEET

BEFORE YOU COOK IN METRICS

Activities	✓ Sections to be completed	Date Completed	Comments
Pre-test			
Section 1 Activity 1			
Activity 2			
Activity 3			
Activity 4			
Activity 5			
Section 2 Activity 1			
Activity 2			
Activity 3			
Activity 4			
Section 3 Activity 1			
or Activity 2			
Activity 3			
Activity 4			
Section 4 Activity 1			
Activity 2			
Activity 3			
Activity 4			
Activity 5			
Capsule Self-check			
Post Test			
Quest			

Name _____ Date _____

BEFORE YOU COOK IN METRICS

PRE-TEST

Match the words in column A to the abbreviations in column B. Put the correct letter on the line to the left of the number.

___1.	gram	a.	ml
___2.	centiliter	b.	m
___3.	milligram	c.	g
___4.	celsius	d.	l
___5.	centimeter	e.	mg
___6.	liter	f.	mg
___7.	meter	g.	^{o}F
		h.	cl
		i.	^{o}C

Pick the correct answer and write the letter on the line to the left.

___8. A milliliter is _____ times smaller than 1 liter.

a. 10

b. 100

c. 1000

___9. A gram is _____ times larger than a decigram.

a. 10

b. 100

c. 1000

___10. A centimeter is _____ times smaller than a meter.

a. 10

b. 100

c. 1000

___11. A kilogram is _____ times larger than a gram.

a. 10

b. 100

c. 1000

___12. Dry measures come in _____ sizings.

a. liter

b. milliliter

c. meter

___13. Unless told differently, dry ingredients are measured:

a. level

b. heaping

c. rounded

___14. 1 cup = _____ ml

a. 50

b. 125

c. 250

___15. When measuring a liquid, always hold the measure:

a. so you are looking down at it

b. so you are looking up at it

c. at eye level.

___16. 1 liter is about equal to

a. ½ c.

b. 2 c.

c. 1 qt.

___17. Metric temperature is recorded in

a. celsius

b. fahrenheit

c. both

___18. A liquid measure has a lip on it because

a. it can make a hole in the other ingredients you are pouring into

b. it will not spill all over as easy

c. so it looks different from dry measures

___19. If a recipe calls for a 190° C temperature, what would it be in °F.

a. 374°

b. 350°

c. 290°

True or False

Mark the following statements T if they are true or F if they are false.

___20. You need to keep your non-metric measuring equipment.

___21. Water freezes at 100°C.

Circle the correct word

22. You use a _____ to weigh ingredients.

scale thermometer

WORKSHEET # 1-2 Name _____ Date _____

Section 1

Activity 2

Before You Cook In Metrics

Complete this worksheet and when you are finished, turn it in to be checked.

Ask your teacher where to find the sugar, flour, oatmeal, and shortening.

Get out all the equipment you will need to measure the following amounts of these ingredients and have your teacher or a classmate watch you correctly measure these ingredients.

	✓ if OK
250 ml sugar	_____
125 ml flour	_____
125 ml sifted flour	_____
375 ml oatmeal	_____
50 ml shortening	_____

checked by: _____

WORKSHEET # 1-3 Name _____ Date_____

Section 1

Activity 3

Before You Cook In Metrics

Complete the following worksheet and when finished, turn it in to be checked.

Using the 250 ml, 125 ml, 50 ml, 25 ml, 15 ml, 5 ml, 2 ml, and 1 ml measure cards from the Measurement Station, make up the correct answers to the following questions.

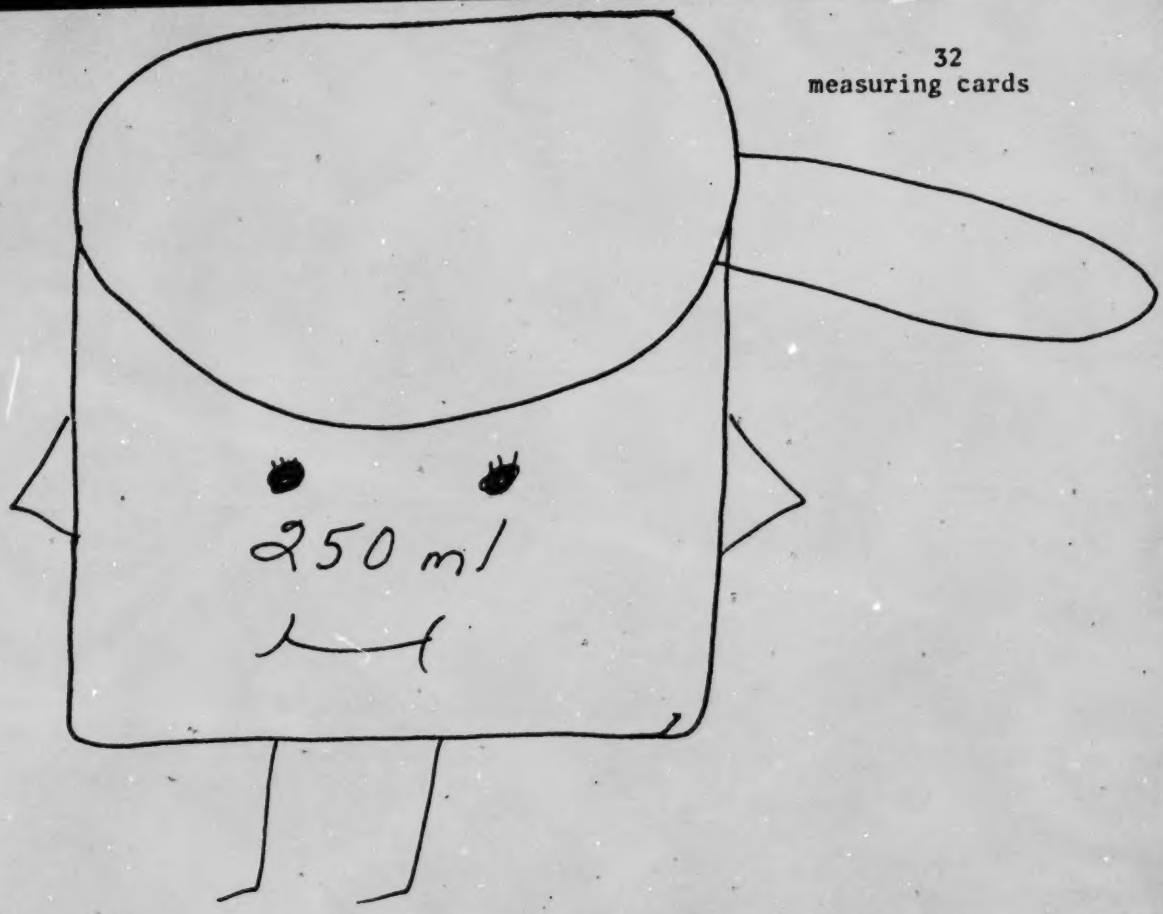
Example: Write the different combinations of ways to measure 150 ml, using no more than 4 measurements.

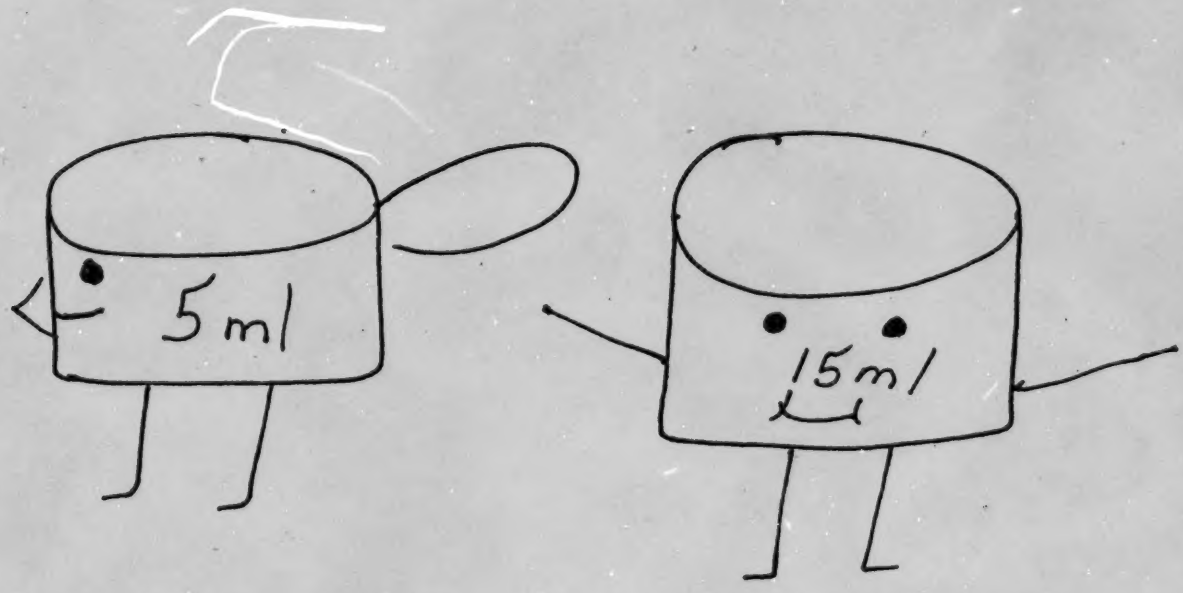
Answer: 125 ml + 25 ml
50 ml + 50 ml+ 50 ml
25 ml + 25 ml + 50 ml+ 50 ml

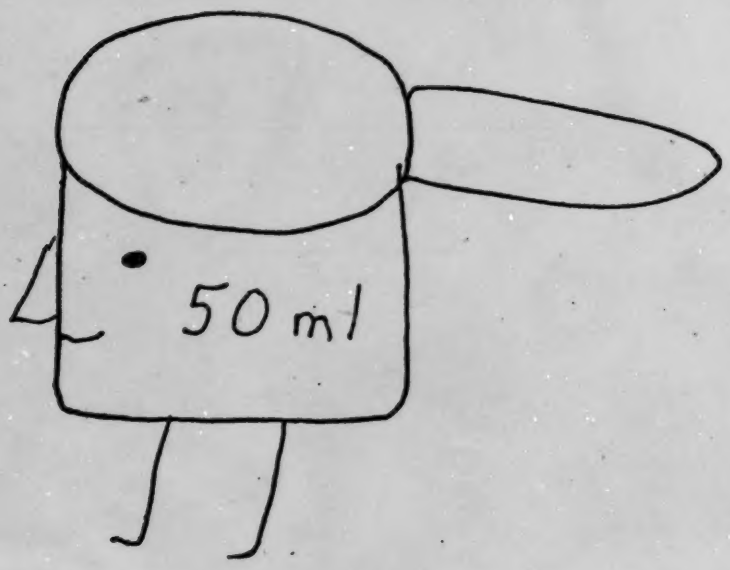
1. Write the different combinations of ways you can measure 375 ml using no more than 4 measurements.

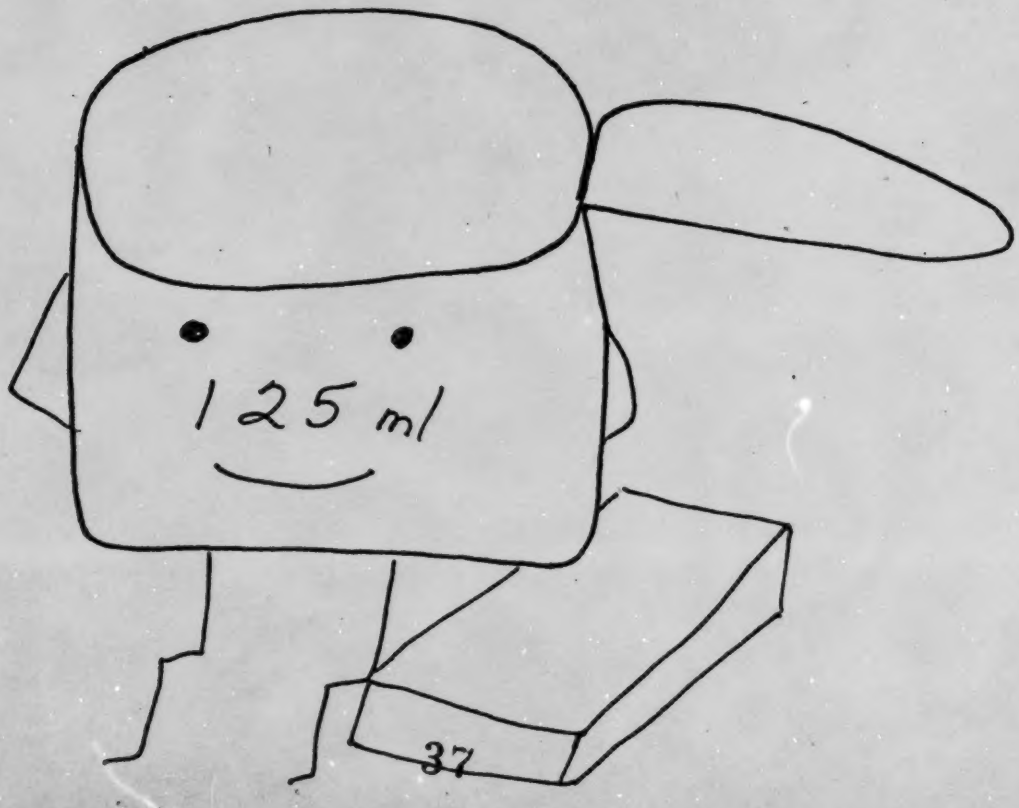
2. Write the different combinations of ways you can measure 50 ml using no more than 4 measurements.

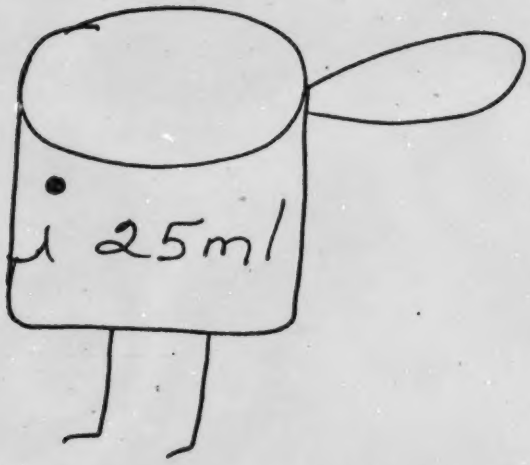
3. Write the different combinations of ways you can measure 500 ml using no more than 4 measurements.


250 ml


5 ml
15 ml


50 ml


125 ml


125ml

WORKSHEET # 1-4 Name _____ Date _____

Section 1

Activity 4

Before You Cook In Metrics

Complete the following worksheet and when finished, turn it in to be checked.

Complete the following sentence by filling in the correct word. There is a blank for each letter in the word that correctly answers the question.

1. Ml is the abbreviation for - - - - - - - - - - -. (1)
2. 250 ml is equal to _ _ _ _ (2) _ _ .
3. 125 ml is equal to _ _ _ - _ _ _ _ _ _ _ _.
4. Dry measures can be made of _ (3) _ _ _ _ or _ _ _ _ (4) _ (5) _ _.
5. Unless told in the recipe to round off or heap the ingredients, you _ _ (6) _ _ _ _ it off.
6. To measure in metrics, you will have to purchase some new _ _ _ (7) _ _ _ _ _ _.

Write the letter from the words you filled in above on the blank it corresponds with below.

Before long, you, the consumer, will have to learn _ _ _ _ _ _ _.
3 6 5 1 7 2 4

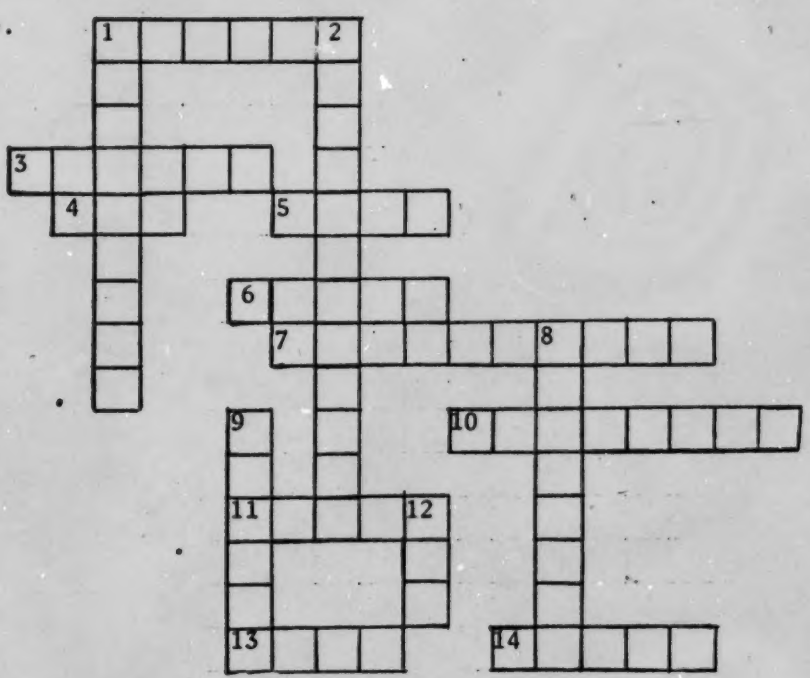
WORKSHEET # 1-5 Name _____ Date _____

Section 1 Self-Check

Activity 5

Before You Cook In MEtrics

Complete this crossword puzzle and then get the key from your teacher and check your paper. Return the key and your paper to your teacher to record your score.



ACROSS

1. Instead of using cups and tablespoons, use milliliters which is _____.
3. Metric measuring is _____ than conventional.
4. You will need to _____ new metric measuring utensils.
5. Be sure to _____ your conventional measures for old recipes.

DOWN

1. Use solid _____utensils to measure flour in.
2. For recipes that are not metric, you need your _____ measuring utensils.
8. When making an amount larger, you are to _____ it.
9. Metric utensils come in _____ also.

(Activity 1-5 continued)

6. Metric utensils come in _____.
7. The unit of measure for measuring small amounts of solid ingredients is _____.
10. To make an amount smaller you _____ it.
11. Shortening is a type of _____ ingredient.
12. Flour is a type of _____ ingredient.
13. In conventional measuring, use the unit of _____.
14. Unless told otherwise, always use a _____ measurement.

NOW YOU'RE COOKING, LET'S GO ON TO SECTION 2.

WORKSHEET # 2-2 Name _____ Date_____

Section 2

Activity 2

Before You Cook In Metrics

Using the metric liquid measure, correctly measure each of the following amounts and have your teacher or another student check each one as you do it to be sure it is OK.

	teacher/student OK
1. 25 ml water	_____
2. 150 ml water	_____
3. 250 ml water	_____
4. 50 ml water	_____
5. 75 ml water	_____

Checked by: _____

WORKSHEET 2-4 Name _____ Date_____

Section 2 Self-check

Activity 4

Before You Cook In Metrics

True or False

Circle the correct word to answer each question. Then get the key from your teacher, check your paper and turn in both pages so your teacher can record the score.

True or False 1. When measuring a liquid, hold the measure at eye level for an accurate measure.

True or False 2. You can use a measure that has no spout, to measure liquids.

True or False 3. Liquid measures come in glass.

True or False 4. Liquid measures come in more than 1 size.

True or False 5. You need special liquid measurers for metric recipes.

WORKSHEET 3-3 Name _____ Date _____

Section 3

Activity 3

Before You Cook In Metrics

Complete this worksheet and when finished, turn it in to be checked.

Ask your teacher where to find the pots and pans you are to measure and get a metric measure. Correctly measure the length, width, and depth or the diameter of 5 pans and record it AND the letter that is taped on the pan.

	Letter	Pan Size in cm
1.		
2.		
3.		
4.		
5.		

Choose 2 different saucepans. Estimate how much they hold and record that amount under the correct heading. Measure to see how many liters of water they really hold and record it AND the letter that is taped on the pot. Then record the difference between the estimated and the real.

	Letter	Estimated Amount	Pot Size in Metrics	Difference
1.				
2.				

WORKSHEET # 3-4 Name _____ Date_____

Section 3 Self-check

Activity 4

Before You Cook In Metrics

Complete this self-check. When you have finished, get the key from your teacher and check your paper. When you are done, give your paper and the key to your teacher so your score can be recorded.

Answer the following questions.

1. Pans are measured in _____ in metrics.
2. Pots are measured in _____ in metrics.
3. A 1 quart pot is about the same as a _____ pot.
4. Do pots and pans have to be in metrics before you can use them in a metric recipe? _____. Explain.
5. Get 3 different sizes of pans from the Measurement Station. Measure each pan and record it and its letter.

	Letter	Pan Size in Metrics
1.		
2.		
3.		

WORKSHEET 4-1 Name _____ Date____

Section 4

Activity 1

Before You Cook In Metrics

Complete this worksheet by doing either section A, B, or C.

A. Get a plain metric thermometer and take the temperature of 3 different liquids. List the liquid and the temperature you read.

1.

2.

3.

OR

B. Get an oven thermometer and place it in the oven. Turn the oven on to 350° F or 177°C. In 15 minutes record the temperature of the oven. Do the same thin 5 minutes later and again after 5 minutes.

1st reading _____

2nd reading _____

3rd reading _____

OR

C. Record the temperature of the freezer section with a metric thermometer. Then take and record the temperature of the main section. After you have finished that, record the temperature of the room. Remember that you will have to give time for the temperature to change on the thermometer.

Freezer temperature-

Main section temperature-

Room temperature-

WORKSHEET 4-2 Name _____ Date _____

Section 4

Activity 2

Before You Cook In Metrics

Complete the following worksheet and when finished, turn it in to be checked.

Use the following formulas to convert from ^{o}C to ^{o}F or from ^{o}F to ^{o}C, be sure to show your work.

From ^{o}F to ^{o}C

$^{o}F - 32^{o} \times 5/9 = {}^{o}C$

From ^{o}C to ^{o}F

$^{o}C \times 9/5 + 32^{o} = {}^{o}F$

1. Changed the oven temperature from $325^{o}F$ to ^{o}C.

2. Change the oven temperature from $275\ ^{o}F$ to ^{o}C.

3. If the recipe for candy calls for a temperature of $212\ ^{o}F$, what would that be in ^{o}C.

WORKSHEET 4-2 (continued)

4. Change 87 ^{o}C to ^{o}F.

5. Change 135 ^{o}C to ^{o}F.

WORKSHEET 4-3 Name _____ Date _____

Section 4

Activity 3

Before You Cook In Metrics

Complete this worksheet and when finished, turn it in to be checked. Ask your teacher where to get the ingredients.(probably at the Management Station).

Correctly measure the following amounts of ingredients, weigh that amount of ingredient on the scales and record its weight. Repeat the procedure by removing the ingredients and starting all over. Do this three times. Look to see how close your answers are for each of the ingredients.

	1st measurement	2nd measurement	3rd meaurement
250 ml sugar	_____	_____	_____
125 ml sifted flour	_____	_____	_____
375 ml oatmeal	_____	_____	_____
50 ml shortening	_____	_____	_____

WORKSHEET 4-4 Name _____ Date _____

Section 4

Activity 4

Before You Cook In Metrics

Assume Millie wants to make your favorite main dish. Write your recipe on this page. Put a ✓ by those items that require a liquid measure. Put an X by those that require a dry or solid measure. Underline the pot or pan size in blue. Convert this recipe to metrics.

WORKSHEET 4-5 Name _____ Date_____

Section 4 Self-check

Activity 5

Before You Cook In Metrics

Unscramble the following letters to find a word that has to do with cooking in metrics. When you find the word, write its definition beside it. When finished, get the key from your teacher and check your paper. Turn the key and your paper back into the teacher to be recorded.

1. eotrtmehmre _____

2. caesls _____

3. nebaacl _____

4. lcessui _____

5. agsmr _____

6. eedgres _____

CAPSULE SELF-CHECK Name _____ Date_____

Before You Cook In Metrics

Complete the sentence. There is a line for each letter.

1. Instead of measuring in teaspoons and tablespoons, in metrics you measure in - - - - - - - - - - - -.
2. Pans are measured in - - - - - - - - - - - - instead of inches.
3. Saucepans are measured in - - - - - - - instead of quarts.
4. To measure a loaf pan, measure the - - - - - - -, - - - - - -, and - - - - - -.
5. Temperature in metrics is measured in degrees - - - - - - - -.
6. Some foods are measured by weight and to measure them you use a - - - - - - - - or - - - - - - -.
7. The unit of measure when measuring by weight is in - - - - - -.

When you have completed this, get the key from the teacher, grade your paper, and return key and your paper to the teacher.

QUEST

1. If you like to do comparisons, you might like this quest activity. You will need a graduated cylinder (if you do not have one in your room ask the science teacher if you may borrow one of theirs), a metric measuring set, a 1 cup measure, a teaspoon, a tablespoon, and some water.

   a. determine how many teaspoons water it takes to fill a cylinder to 20 ml.

   b. determine how many ml are there in 1 teaspoon. (Divide 20 ml by the number of teaspoons you found in part a.)

   c. determine how many tablespoons of water it takes to fill a cylinder to 20 ml.

   d. determine how many ml there are in 1 tablespoon (Divide 20 ml by the number of tablespoons you found in part c.).

   e. What will the capacity of a metric cup be?

When you have finished, turn in your paper to your teacher to be checked.

Name _____ Date_____

Before You Cook In Metrics POST-TEST

Choose the correct answer and write the letter on the line to the left of the number.

___1. Metric temperature is recorded in:

a. ^{o}F

b. ^{o}C

c. ^{o}T

___2. To weigh ingredients for a recipe you use:

a. scales

b. thermometer

c. level

__3. If you have to convert a recipe that says to bake at 235 ^{o}C to ^{o}F, what would it be:

a. 400

b. 455

c. 375

___4. 2 liters is about the same as:

a. 1 quart

b. 2 quarts

c. 3 quarts

___5.Dry measures come in _____ sizes

a. l

b. ml

c. m

___6. ½ c. = _____ ml.

a. 50

b. 125

c. 250

___7. Pans are measured in _____ sizes for metrics

a. inches

b. meters

c. centimeters

___8. To measure a pan for its size

a. measure from outside to outside.

b. measure from inside to inside.

c. measure from outside to inside.

___9. When measuring a rectangular pan, for example, you need to know its

a. length

b. width

c. length and width

___10. Water freezes at

a. $0^{o}C$

b. $32^{o}C$

c. $100^{o}C$

___11. The type of thermometer used when frying french fries would be

a. oven

b. meat

c. frying and candy

Given below are a list of abbreviations of metric terms used in cooking. Beside the abbreviation, give the word it stands for.

12. ml _____

13. m _____

14. g _____

15. l _____

16. mg _____

17. cm _____

18. ^{o}C _____

19. How do metric thermometers vary from non-metric thermometers?

_____

Put a ✓ by those ingredients that require a liquid measurement and put an X by those that require a dry or solid measurement.

___20. salt

___21. water

___22. flour

___23. oatmeal

__24. milk

___25. baking powder

BEFORE YOU COOK IN METRICS.

Student Materials

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Developed By:
Joan Noyes

As Part of
Project COST
ESEA Title IV
Kansas State Dept. of Education
USD 449
Easton, KS 66020

INTRODUCTION

Let's say you were really hungry and you started looking through a recipe book. You found a picture of a frosty beverage in the book that looked very tasty, and so you searched until you found the recipe. When you found the recipe, it looked different from other recipes you had seen before, and you didn't know what to do. The recipe looked something like this:

Golden Freeze Frosty Beverage

168 g frozen orange juice
500 ml milk
125 ml sugar
5 ml vanilla
8 - 10 ice cubes

How disappointing, you were all set to sit back and enjoy this cooling beverage - Golden Freeze!!

So that this never <u>really</u> does happen to you, let's learn about metrics in the kitchen. We will look at the differences in equipment and measurements, and how to use metrics in the kitchen. This will help you to be the GREATEST cook in the future, since many recipes will be printed in metrics.

But before we get started, go to your teacher and get a copy of the pre-test. Do the best you can but if there are questions you can't answer, please do not worry about it, simply leave them blank. When you finish, give the test to your teacher; it will be checked to see what parts of the capsule you need to complete.

OBJECTIVES

After completing this capsule you will be able to:

1. demonstrate correct use of the metric terms and symbols found in cooking.
2. demonstrate the ability to use metric kitchen equipment.

You would be better prepared to complete this capsule if you have completed the capsules "Basic Metrics-- Parts 1, 2, and 3" before you do this one.

SECTION 1

EQUIPMENT and MEASUREMENTS

For Dry and Solid Ingredients

DRY AND SOLID METRIC

When you have completed this section you will be able to:

1. demonstrate correct use of the metric terms and symbols found in cooking, when using dry and solid measurements.
2. demonstrate the ability to use dry and solid metric kitchen equipment.

To cook in metrics, USE metric measures.	BUT	KEEP regular measuring equipment for your conventional recipes.

Remember, you are a consumer and it is up to you to decide the kind of metric measures to buy and how to use them.

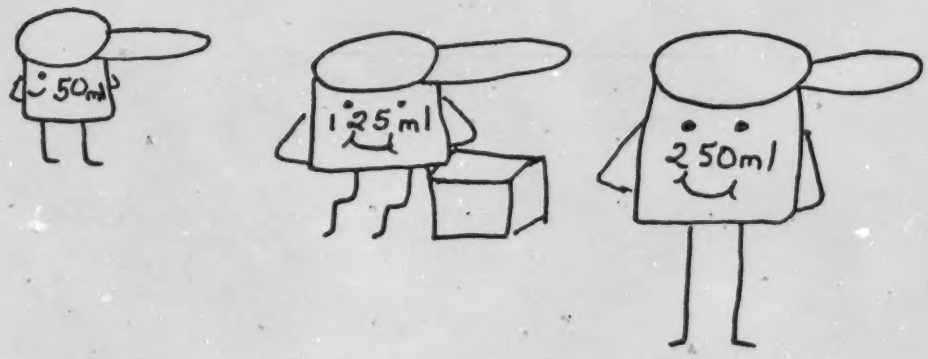
Use these dry or solid measures....

250 ml which = 1 cup

125 ml which = ½ cup

50 ml which = ¼ cup

They come in metal or plastic.



Did you remember that .....

ml stands for milliliter and that c stands for cup??

You will also need metric measuring spoons. They come in either metal or plastic.

Notice that all of the metric units are in ml which makes it easier to increase or decrease. You might have to increase or decrease amounts if you wanted to make a smaller amount of food or a larger amount than the original recipe called for.

Use these sizes....

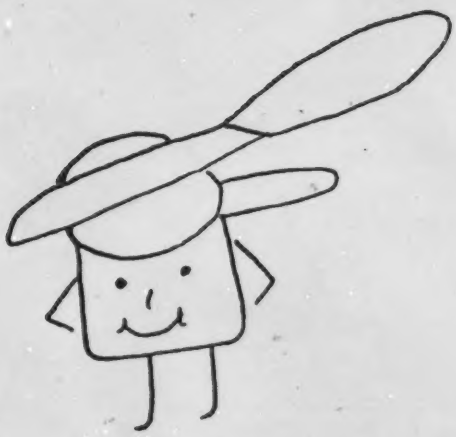
1 ml which = ¼ teaspoon or ¼ t.

2 ml which = ½ teaspoon or ½ t.

5 ml which = 1 teaspoon or 1 t.

15 ml which = 1 tablespoon or 1 T.

25 ml which = 2 tablespoon or 2 T.



Remember to MEASURE level with the top of the container to get an ACCURATE AMOUNT. The only time you do not measure level is when the directions say rounded or heaping.

Now let's go with Millie to the kitchen and practice.....

ACTIVITIES

Section 1.

Do ALL of the following activities.

1. Make a poster showing the different types of ingredients you would measure in the different types of solid or dry measures. Use the information at the Media Station to help you make your poster great! Display it in your classroom.
2. Let's go to the kitchen and do some measuring. You will need worksheet #1-2 from the Management Station and a set of dry or solid measures from the Measurement Station. When you have finished it, turn your paper in to be checked. Be sure to return all materials to their proper places.
3. Go to the Management Station and get worksheet #1-3. When you have finished your paper, turn it in to be checked.
4. Go to the Management Station and get worksheet # 1-4. When you have finished it, turn it in to be checked.
5. Go to the Management Station and get worksheet #1-5 which is a self-check. Complete the worksheet and when finished, get the key from your teacher and check your work. Turn in the key and your paper to have your score recorded.

SECTION 2

EQUIPMENT and MEASUREMENTS

For Liquid Ingredients

LIQUID METRIC MEASURES

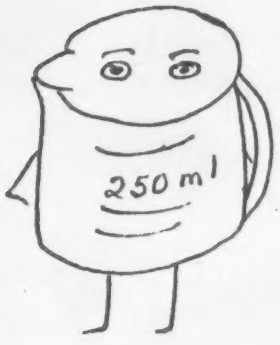
When you have completed this section, you will be able to:

1. demonstrate correct use of the metric terms and symbols found in cooking, when using liquid measurements.
2. demonstrate the ability to use liquid metric kitchen equipment.

To measure liquids, you need a metric liquid measure.

These measurers come in plastic or glass.

they come in sizes of .....



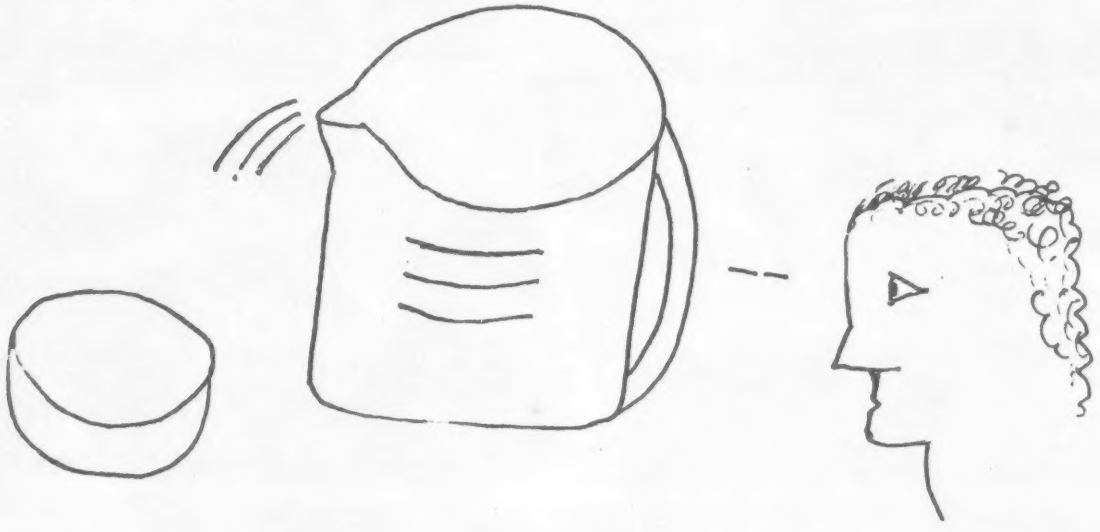
which is equal to 1 c.

and

which is equal to 2 c.

DO NOT measure liquids in measures designed for dry ingredients. You may spill them or not get a full correct measure.

REMEMBER-- a liquid measure has a pour spout and is filled to the measuring line when you look at the line at eye level.



When you get ready to purchase a liquid measure, be sure it has a pour spout. Also consider whether you want glass or plastic. Most of the plastics will melt or crack if you pour boiling liquids in them. Glass may be the best buy for you.

Did you notice that liquid measures are also measured in ml which makes it easier and more convenient to increase or decrease recipes? It is easier and more convenient because all of the measurements are in the same term which is ml, instead of cup, tablespoon, teaspoon, etc. as we do it now.

The Metric System is

- easier
- more convenient

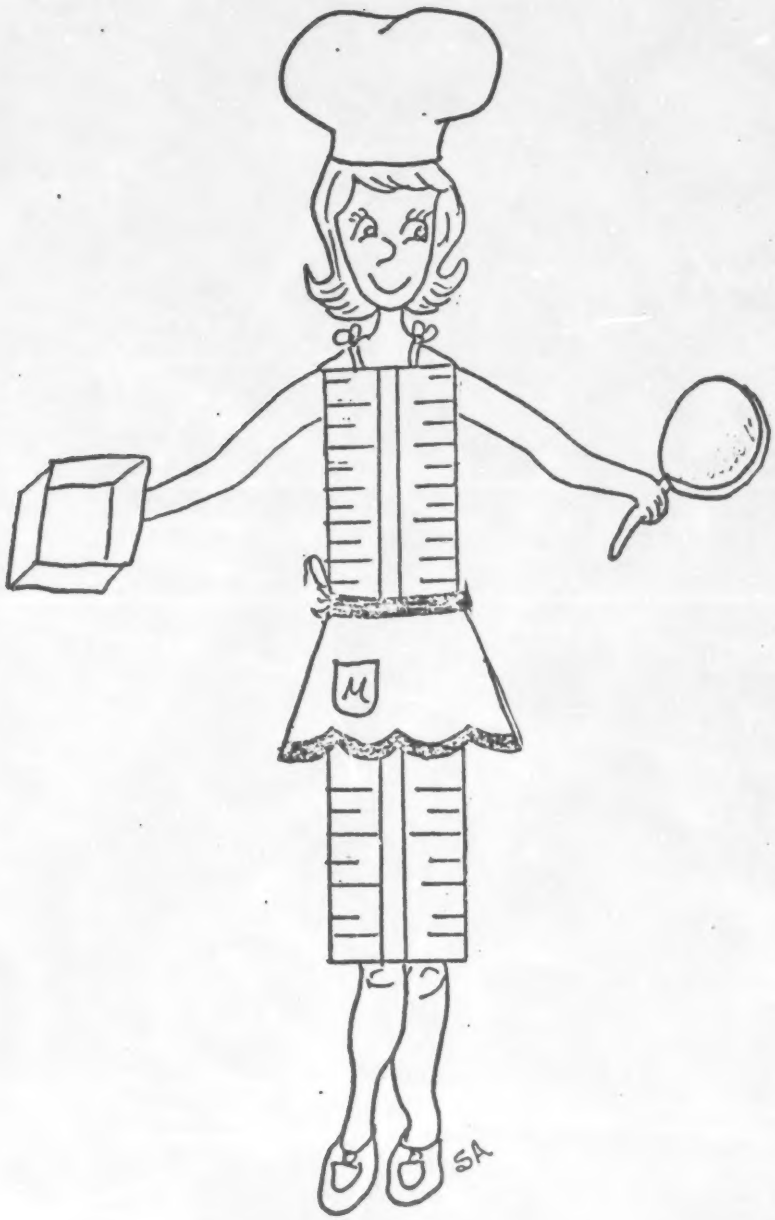
ACTIVITIES

Do ALL of the following activities.

1. Make a poster showing what types of ingredients can be measured in the types of measures included in this section. Use the information on making poster at the Media Station to help you make your poster.
2. Let's go into the kitchen and practice measuring. Take with you worksheet 2-2 from the Management Station and a liquid measure from the Measurement Station. When you have finished, turn it in to be checked. Be sure to return all materials to their proper places.
3. On a sheet of paper tell why you should use a liquid metric measure that has a spout or lip on it, and also why you should look for the correct measure at eye level. OR You could make up a riddle, poem or cartoon about this if you want to instead of writing a paper. Use the information at the Media Station to help you make your cartoon.
4. Go to the Management Station and get Worksheet 2-4 which is a self-check. Complete the worksheet and then get the key from your teacher, grade your paper, and turn it all back in for your teacher to record your score.

SECTION 3

POTS and PANS



POTS AND PANS

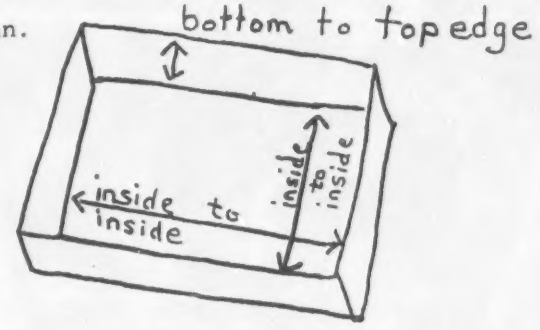
When you have completed this section, you will be able to:

1. demonstrate correct use of the metric terms and symbols found in cooking.
2. demonstrate the ability to use metric kitchen equipment.

You will NOT have to purchase new pots and pans, but you WILL have to learn their metric sizes or how to measure them in centimeters to see what size they are.

Here is how to measure a pan so that you know which size pan you need for your recipe.

Take a metric ruler and measure from inside to inside and from bottom of pan to top edge of pan.

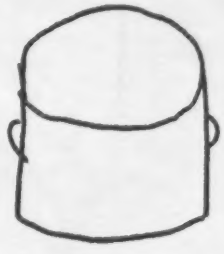


For round pans, measure from top of pan across and through the center to the other edge.

As for saucepans, most of the ones that are used now are in quarts. All you have to remember is that a liter is a little larger than a quart, so you can round it off and use a 1 quart saucepan when you need a 1 liter pan or a 2 quart saucepan when you need a 2 liter pan, etc.

You will soon be able to know which pot will be the correct size without measuring it.

1 quart is about 1 liter



2 quarts are about 2 liters

On the next page is a chart showing some of the most common pot and pan sizes in both metric and non-metric sizes.

METRIC PAN SIZES CHART

NAME	NON-METRIC SIZE	METRIC SIZE	PAN WILL HOLD
Round	8" round	20 cm round	1 liter
	9 " round	23 cm round	1.5 liters
Square	8" square	20 cm square	2 liters
	9" square	23 cm square	2.5 liters
Rectangular	13 x 9 x 2 "	33 cm x 23 cm 5 cm	3.5 liters
Loaf	9 x 5 x 3 "	23 cm x 13 cm 8 cm	2 liters
Pie	8"	20 cm	600 ml
	9"	23 cm	1 liter
	10 "	25 cm	1.3 liters
Cookie	14 x 10 "	36 cm x 25 cm	
Casseroles	1 quart		1 liter
	2 quart		2 liters
Saucepans	1 quart		1 liter
	2 quart		2 liters
	3 quart		3 liters

Section 3

ACTIVITIES

Do ONE of the following activities.

1. Prepare a bulletin board of different pan sizes in metric measurers and put it up for the class to see. Label each with metric and non-metric sizes. Use the information at the Media Station to help you with your bulletin board.

2. From a catalog, find pictures and pan sizes of at least 8 different pan sizes. Convert these to metrics. Make these into a notebook and turn in for your teacher to check. You can get the scissors, catalog and paste from the Measurement Station.

Do BOTH of the following activities.

3. Go to the Management Station and get worksheet # 3-3. Complete the worksheet and turn it in to be checked when you have finished.
4. Go to the Management Station and get worksheet # 3-4 which is a self-check. Complete the worksheet and get the key from your teacher. Check your paper and turn in the paper and the key to your teacher to be recorded.

SECTION 4

ADDITIONAL COOKING EQUIPMENT

ADDITIONAL EQUIPMENT

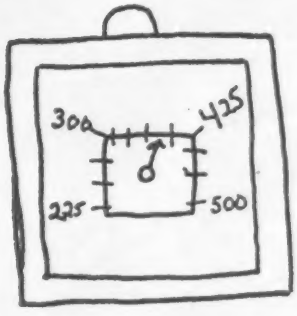
Another item of equipment that you will need is a Celsius thermometer. You may need one for frying and candy making, one for meats, another for use in the oven, and still another to find the temperature of the room. It will look like the Fahrenheit thermometers except the numbers will be different.

Water freezes at 0° C.

Body temperature is 37° C.

Water boils at 100° C.

(Remember that $^{\circ}$C means degrees celsius or centigrade).



Oven

Meat

Candy and Frying

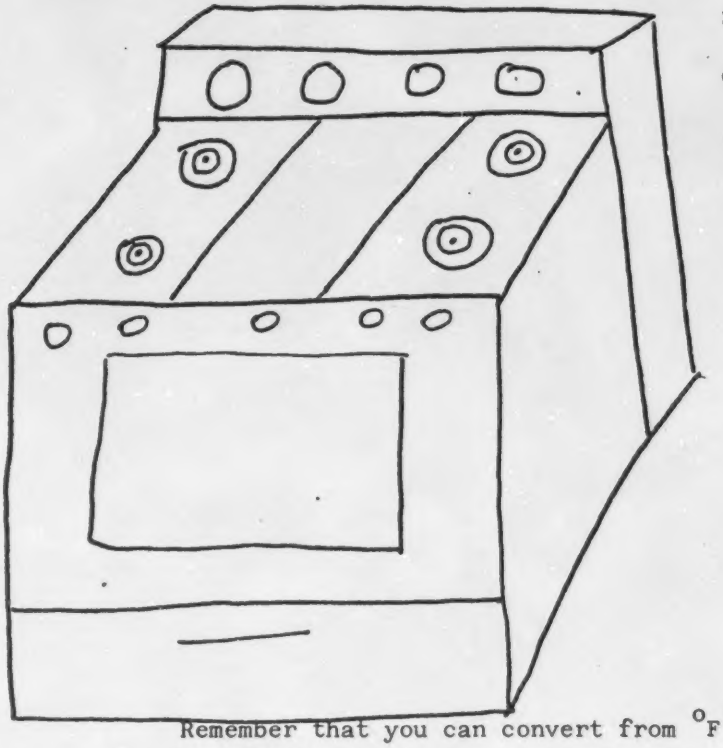
If ingredients are measured in grams or multiple parts of a gram, you will need a set of scales or a balance to weigh the ingredients. Some scales have a pan on top and you read the weight on the line below or beside the pan. Other scales have 2 pans. On one pan you put on weights in the amount that the recipe calls for. The weights come in various sizes so you can get the correct amounts. When you have the weights on one pan, you can them put the ingredients on the other pan until the scale balances.

Another kind of scale has a balance beam to one side of the pan. On the beam there are weights that slide over until you get the same amounts as the recipe calls for. You then add ingredients to the pan until the scale balances.

As you can see, there are several types of scales and balances available. You, as a consumer, will need to decide which type you like and which one works well for you. There is very little difference in price, and both types are accurate when you learn how to use them.

APPLIANCES

Depending on the type of stove you have, you may or may not have to convert from Celsius to Fahrenheit or vise versa. Older stoves will have Fahrenheit readings and new ones may have either Fahrenheit or Celsius or both.



Some common oven temperature conversions are:

^{o}F	=	^{o}C
212		100
300		149
325		163
350		177
375		191
400		204
425		218
450		232
475		246

Remember that you can convert from ^{o}F to ^{o}C or from ^{o}C to ^{o}F by using the following formulas.

from ^{o}F to ^{o}C, $^{o}F - 32^{o} \times 5/9 = {}^{o}C$

from ^{o}C to ^{o}F, $^{o}C \times 9/5 + 32^{o} = {}^{o}F$

Another point for you to remember is that you should never mix the conventional system. Use either all metrics or all the conventional method.

THINK METRICS!!

Gram (g)	Kilogram (kg)
Milligram (mg)	Centigram (cg)
Liter (l)	Kiloliter (kl)
Milliliter (ml)	Centiliter (cl)
Degrees Celsius (^{o}C)	Centimeter (cm)

Remember that the Metric System...

1. is a universal language
2. is easier to use
3. takes less times to use and convert
4. has fewer terms to learn
5. is on the base 10 system of counting

Section 4

ACTIVITIES

Do ALL of the following activities.

1. Go to the Management Station and get worksheet # 4-1 and do either section A, B, or C. When you have finished, turn your paper in to be checked.
2. Go to the Management Station and get worksheet # 4-2 and complete it. When finished, turn it in to be checked.
3. Go to the Measurement Station and get a set of metric dry measures. Also get worksheet # 4-3 from the Management Station. When you have finished it, turn it in to be checked. Be sure to return all supplies where they belong.
4. Go to the Management Station and get worksheet # 4-4 and complete it. When finished, turn it in to be checked.
5. Go to the Management Station and get worksheet # 4-5, which is a self-check and complete it. When finished, get the key from your teacher and check your paper. Turn in your paper and the key to have your score recorded.

You have now finished the 4 sections of Before You Cook In Metrics . Before you take the Post-Test, take the Capsule Self-check. When you have finished, get the key from your teacher and check your paper. Turn in your paper and the key so your score can be recorded.

When you have completed this capsule, go to your teacher and get the Post-test and complete it. After you finish it, turn it in for your teacher to check.

If you are interested in doing more in the metric system, you might like to do some of the Quest activities when you have finished the Post-test.